INDIANA'S STRUCTURAL FEATURES AS REVEALED BY THE DRILL.

BY E. P. CUBBERLY.

If we should cut out a small outline map of our State from some rather heavy draughting paper, such as a medium weight Bristol board, and pick it up by taking hold of it near Liberty, on the eastern border, with the right hand, and at the point where the Kankakee River enters Illinois on the western with the left hand, and then, while lowering the left hand a short distance below the right so as to make a small slope toward the northwest, allow the northeast and southwest parts of the State to slope downward a few degrees, the southwest greater than the northeast in proportion to its greater size and weight, we would have a rough approximation to the general structure of our State. I say the general structure, for these methods in no way show the smaller folds. To show even a very few of these we must have recourse to geological sections, and the material from which to construct these has been furnished by the gas and oil drills only within the last few years.

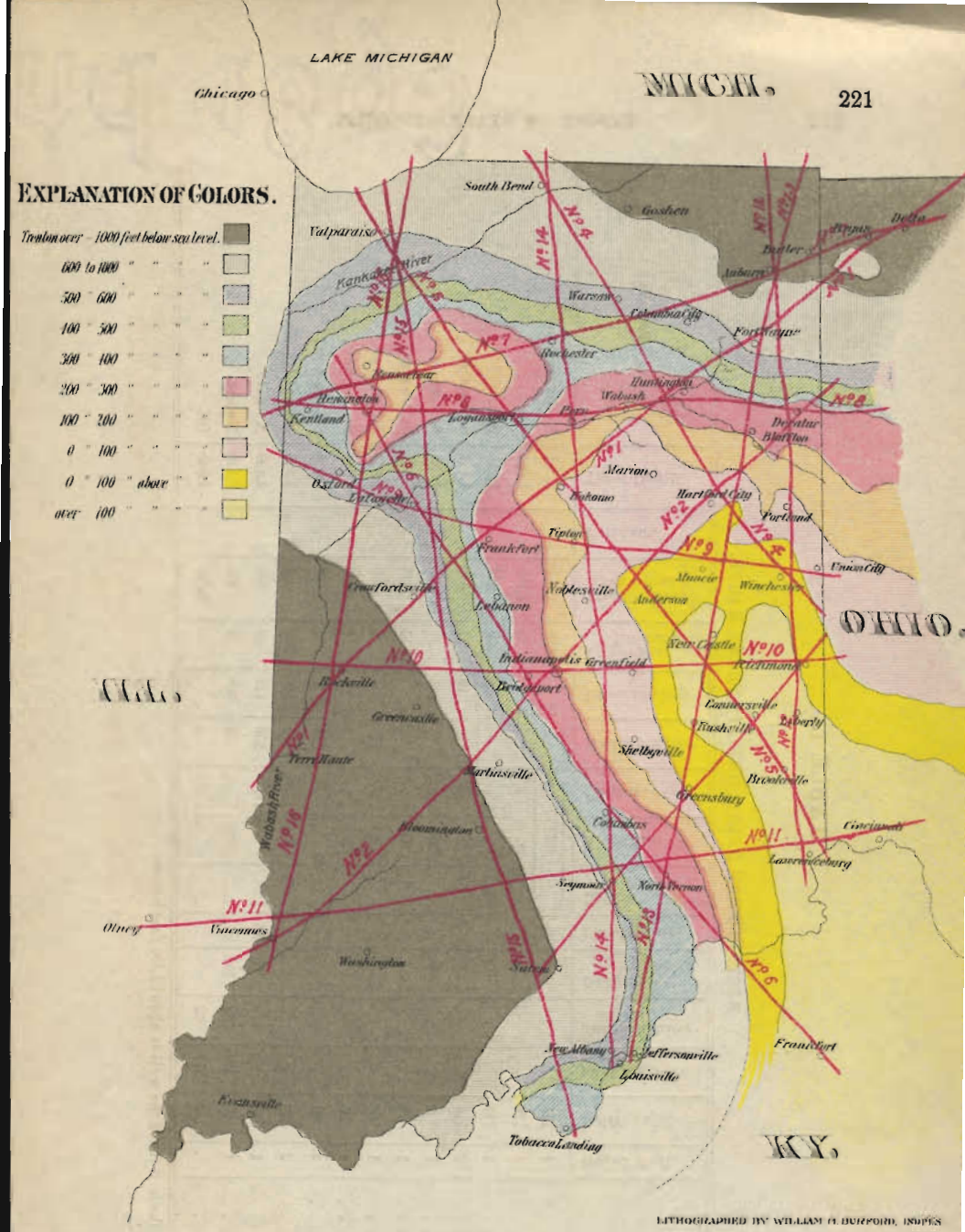
To show a few of these smaller folds, I have constructed sixteen sections in different directions across Indiana, as well as a map of the State showing areas of different elevation and depression of Trenton rock referred to sea level. While the sections and the map are approximately correct, they are also at least ninety five per cent. ideal. In general outline they are as true as the facts at hand enable one to make them, though in local flexures of strata they not only do not make any pretensions to absolute accuracy, but do not even try to represent them.

A rough glance at the map of Trenton areas will show that the axis of the anti-cline runs entirely across the State in a northwest and southeast direction, though it does not keep either a uniform elevation or slope. At Cambridge City it reaches its maximum elevation with Trenton rock 174 feet above sea level, declines rather gradually to a little beyond Kokomo, then sinks to 350 feet below at Delphi, then rises in the vicinity of Monticello, Remington and Renssalear to 158 feet, and then sinks again as it approaches the Kankakee. To the northeast and southwest of the axis the slope is very gradual for some distance, but in

the vicinity of Huntington and Decatur on the north, and Fowler, Indianapolis and Columbus on the south, the gradual downward slope changes to an abrupt one, and Trenton rock soon reaches a depression of over 1,000 feet below tide, the slope being about twice as rapid to the southwest as to the northeast.

Across this map, in various directions, I have drawn lines, prepared tables of strata from drill records, and constructed geological sections to show in a graphic manner the results. On each section I have located the wells and recorded the depth and results. The tables and sections are indeed instructive, especially from the bearing they have on the anti-clinal theory of natural gas. In general, the gas and oil are found in wells marked anti-clinal arches, and where such arches exist in any section, and neither gas nor oil has been obtained, it will generally be found, by comparison with the map of Trenton areas and the other sections, to be due either to the fact that the supposed barren anti-cline is but a low part of a greater anti-cline extending in some other direction, or to some fracture or exposure, such as along the Wabash River and near Cincinnati, by means of which the gas has leaked out.

The following tables are the data from which the correspondingly numbered geological sections have been constructed, and the direction of the sections may be found by reference to the map of lines and Trenton areas. To follow the sections along the lines, comparing elevations of Trenton rock on the sections with those on the map, will not only be found very entertaining and instructive, but will also explain some things in the sections which might seem peculiar. For example, in section IV, the sudden elevation of Trenton rock from Montpelier to Dunkirk, and its sudden depression from Dunkirk to Red Key, are easily explained when we look at the map and see that line No. 4 at Dunkirk crosses a northeast prolongation of the high Trenton area:



LITHOGRAPHED BY WILLIAM A. BURFORD, INDPS.

MAP SHOWING LINES OF GEOLOGICAL SECTIONS AND THE RELATION OF TRENTON ROCK TO SEA LEVEL.

Drawn by E. M. Cubberley.

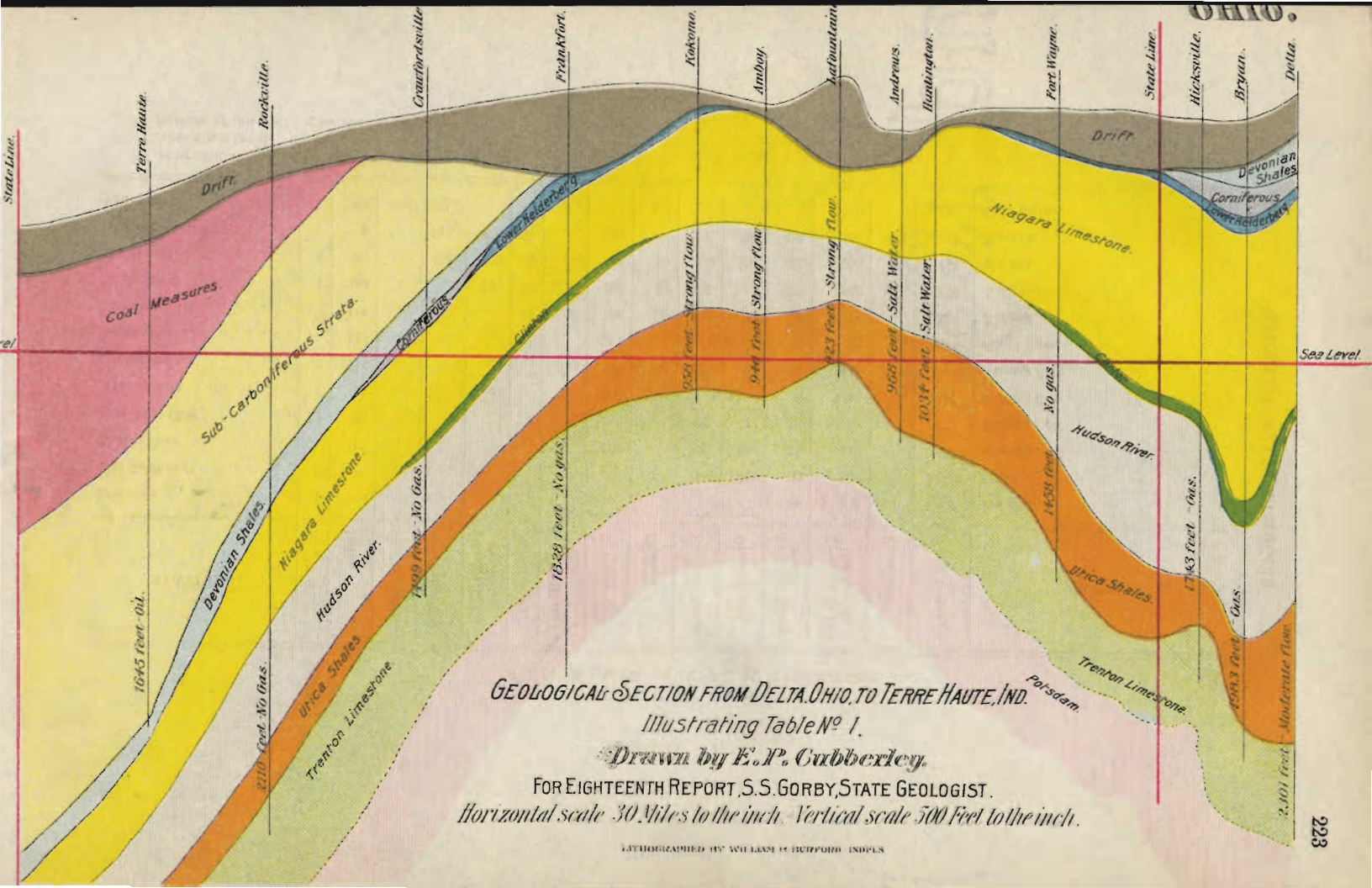
FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

TABLE I.

SECTION FROM DELTA, OHIO, TO TERRE HAUTE.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Delta, Ohio	1	117	...	...	133	45	737			1,030		229	1,241	...	2,301	Moderate flow.
Bryan, Ohio	1	176	...	...	74	1,060				635		38	1,180	...	1,983	Gas.
Hicksville, Ohio.	1	142	...	...	16	..	802	...	...	624		159	822	...	1,743	Gas.
Fort Wayne, Ind	2	110	...	...	...	..	34	551	20	410	312	21	650	...	1,458	Salt water.
Huntington, Ind	1	2	...	...	...	..	...	398	...	275	320	39	255	...	1,034	Salt water.
Andrews, Ind	1	70	...	...	...	..	...	300	...	562		36	†215	...	968	Salt water.
Lafontaine, Ind	1	300	...	...	...	..	..	225	...	175	200	23	6	...	923	Strong flow.
Amboy, Ind	1	35	...	...	...	..	..	350	..	522		33	†100	...	940	Strong flow.
Kokomo, Ind	4	61	...	...	...	..	359		...	265	251	22	97	...	958	Strong flow.
Frankfort	2	278	...	...	...	..	60	300	30	250	150	260	227	...	1,328	No gas.
Crawfordsville, Ind	1	140	...	410	80	55	...	380 (?)		250	115	69	664	...	1,499	No gas.
Rockville, Ind.	1	93	259	689	102	..	...	370	...	324	108	10	1,412	...	2,110	No gas.
Terre Haute, Ind	..	150	573	922	...	.	...	...	...	...	...	..	*1,150	...	1,645	Oil.

*At Terre Haute the bottom of the well is about 1,150 feet below.
†Approximately.



GEOLOGICAL SECTION FROM DELTA, OHIO, TO TERRE HAUTE, IND.

Illustrating Table No 1.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

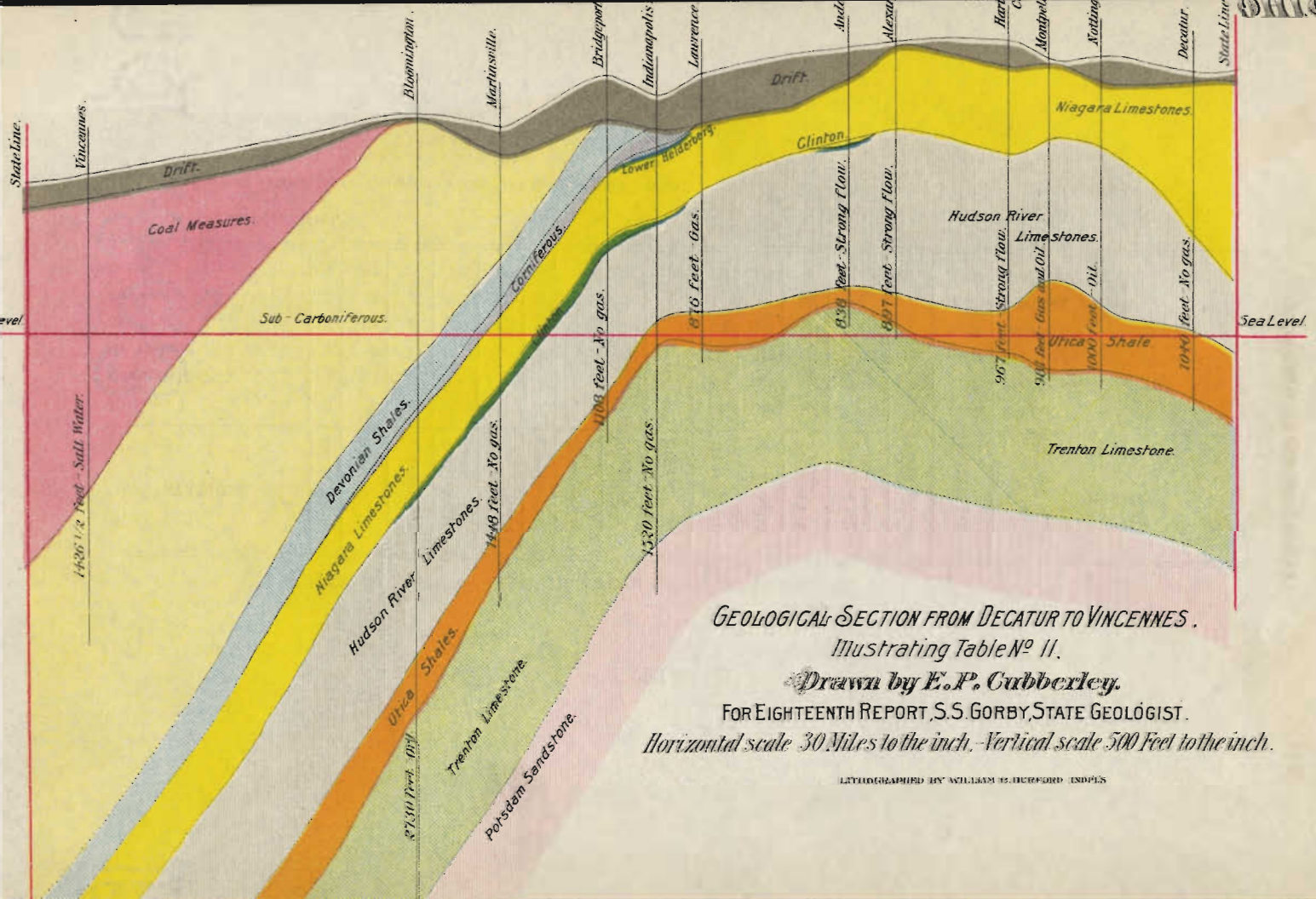
LITHOGRAPHED BY WILLIAM B. BURFORD INDPLS.

TABLE II.

SECTION FROM DECATUR TO VINCENNES.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Decatur	1	30	..	..	...	..	480		...	511		10	223	...	1,040	No gas.
Nottingham*	1	80	.	...	...	.	..	200	...	500	200	20	130	...	1,000	Oil.
Montpelier	1	17	...	..	..	..	..	233	...	432	280	19	110	...	981	Gas and oil.
Hartford City	2	82	...	..	...	..	...	280	...	483	140	32	40	...	967	Strong flow.
Alexandria	1	20	...	...	...	..	.	261	.	611		5	40	...	897	Strong flow.
Anderson	2	114	...	...	...	.	...	186	20	440	54	24	†66	...	838	Strong flow.
Lawrence	..	161	...	...	...	..	...	207	...	476		22	60	...	876	Good flow.
Indianapolis	..	118	...	...	...	68	20	200	20?	300	74	620	179	...	1,520	No gas.
Bridgeport	1	140	..	...	124	40	...	200	24	455	55	70	247	...	1,108	No gas.
Martinsville	1	85	..	323	120	62	...	216	20	420	131	51	780	...	1,448	No gas.
Bloomington	1	6	..	749	155	15	...	240	...	485	180	626	1,108	274	2,730	No gas.
Vincennes	1	80	845?	501½?	..	..	...	...	...	..	...	...	‡950	...	1,426½	Salt water.

* Approximate records from memory by the driller.
† Above sea level.
‡ Bottom of the well below sea level.



GEOLOGICAL SECTION FROM DECATUR TO VINCENNES.

Illustrating Table Nº II.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

LITHOGRAPHED BY WILLIAM H. HERFORD INDPLS

TABLE III.

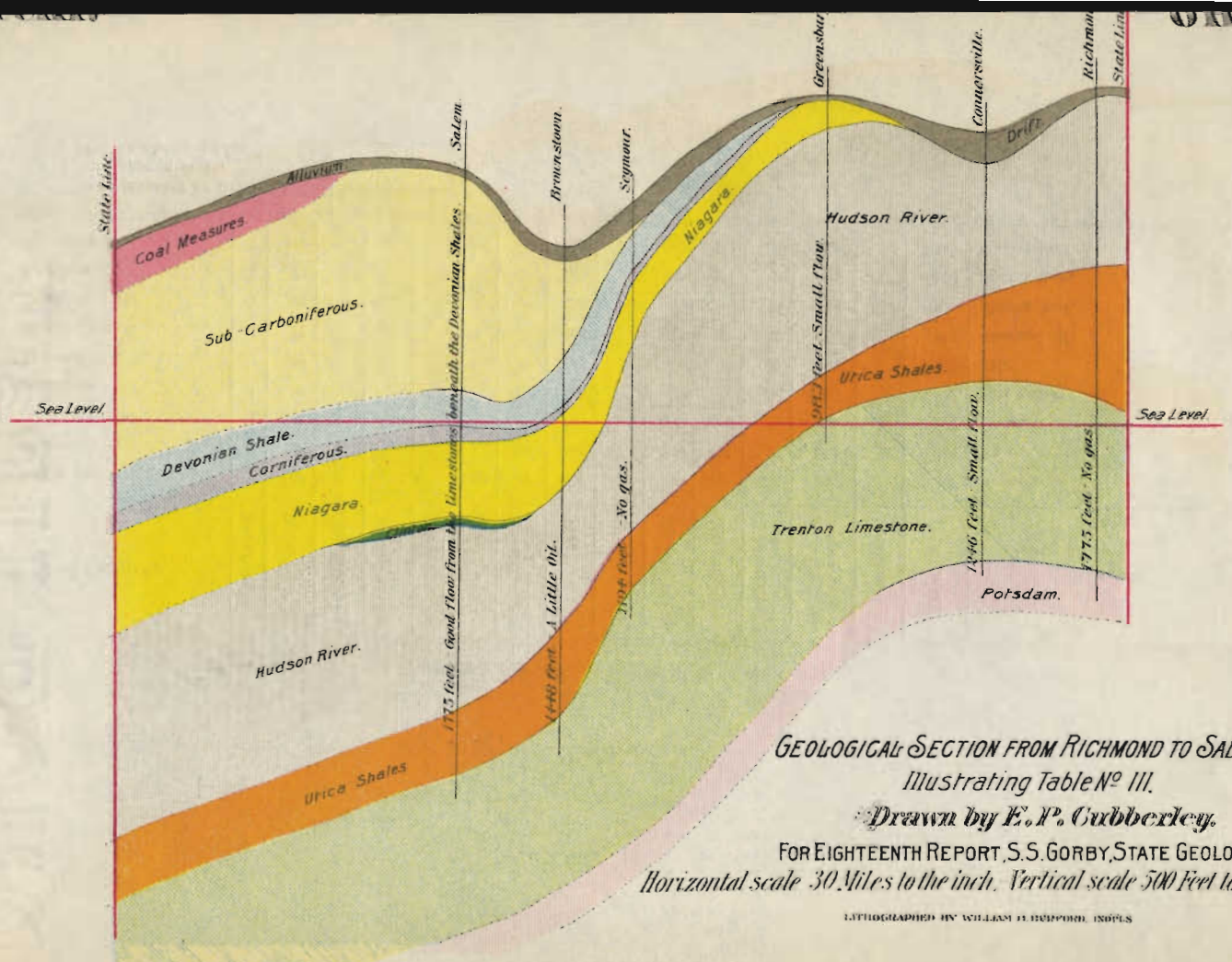
SECTION FROM RICHMOND TO SALEM.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Richmond	1	5	...	...	...	..	...	..	...	500	380	510	*79	10	1,405	No gas.
Connersville	1	97	...	...	...		...	..	...	375	240	522	*120	12	1,246	Small flow.
Greensburg	1	7	..	.	.	..	...	90	...	713	110	63	*22	...	983	Small flow.
Seymour	1	75	...	15	115	20	..	190	..	520	165	94	472	...	1,194	No gas.
Brownstown	1	43	..	275	147	25	...	200	...	658		100	850 ?	...	1,448	Little oil.
Salem	1	†7	...	620	103	40	...	215	30	535	180	45	1,000	...	1,775	‡Good flow.

* Trenton above sea level.

† Soil.

‡ The gas here came from the limestone underlying the Devonian shales.



GEOLOGICAL SECTION FROM RICHMOND TO SALEM.

Illustrating Table Nº III.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

LITHOGRAPHED BY WILLIAM H. BOSFORD, INDPLS

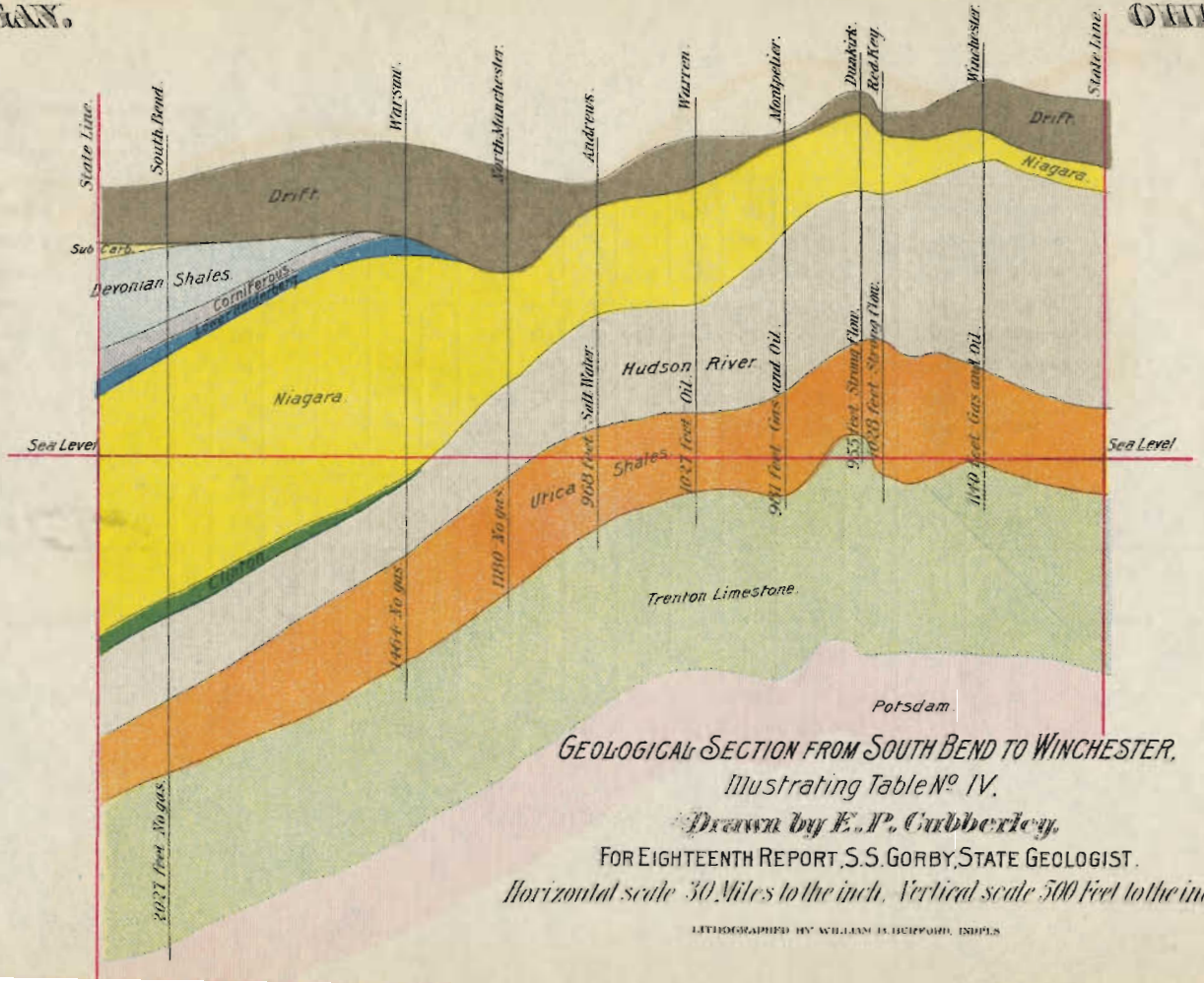
TABLE IV.

SECTION FROM SOUTH BEND TO WINCHESTER.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
South Bend	..	160	...	220		60	40	640	60 ?	200	200	427	855	...	2,027	No gas.
Warsaw	1	248	...	...	...	..	60	592	?	200	287	77	570	...	1,464	No gas.
N. Manchester	1	274	...	...	...	..	.	300	...	250	306	50	355	...	1,180	No gas.
Andrews	1	70	...	...	...	..	..	300	...	562		36	†215	..	968	Salt water.
*Warren		140	...	...	...	..	..	340	...	550		27	†160	..	1,027	Oil.
Montpelier	1	17	...	...	...	..	..	233	...	432	280	19	110	..	981	Gas and oil.
Dunkirk	1	60	...	...	...	..	...	230	...	610		25	‡39	...	955	Strong flow.
Red Key	1	72	..	..	...	.	...	143	..	415	350	48	90	...	1,028	Strong flow.
Winchester	1	147	...	...	...	..	..	71	...	582	250	90	43	..	1,140	Gas and oil.

* From memory by Dr. Good, Sr.—Approximate.
† Only approximate.
‡ Trenton above sea level.

MICHIGAN. OHIO.



GEOLOGICAL SECTION FROM SOUTH BEND TO WINCHESTER,

Illustrating Table No. IV.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

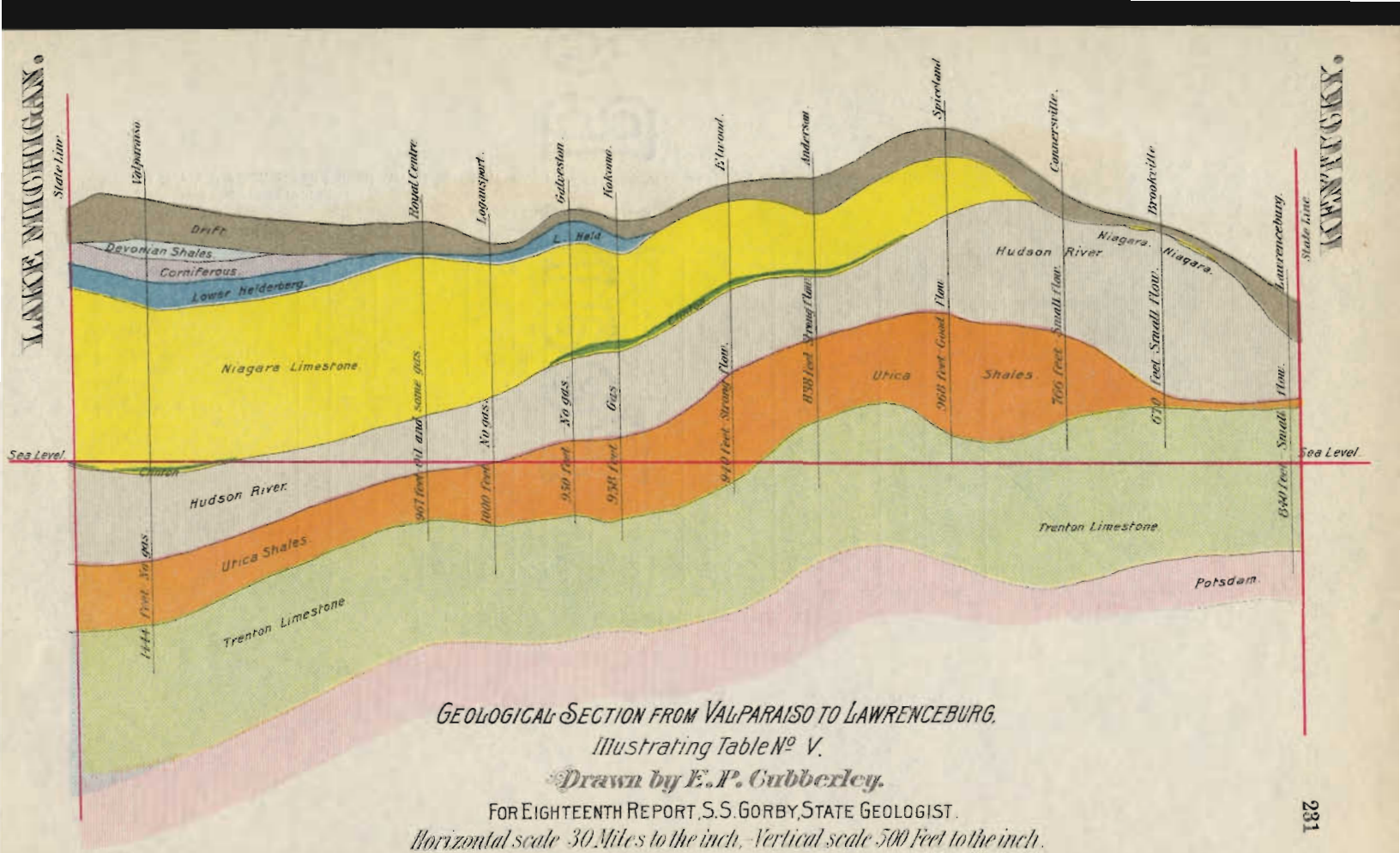
LITHOGRAPHED BY WILLIAM B. BURFORD, INDPLS.

TABLE No. V.

SECTION FROM VALPARAISO TO LAWRENCEBURG.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Valparaiso	1	125	...	...	65	70	80	495	10 ?	260	195	144	602	...	1,444	No gas.
Royal Centre	1	109	...	...	...	...	...	486	...	330		42	190	...	967	Oil and some gas.
Logansport	1	495										...	334	...	...	No gas.
Galveston	1	40	...	...	...		410		...	480		20	†180	..	950	No gas.
Kokomo	4	61	...	...	..	..	59	270	30	265	251	22	97	...	958	Gas.
Elwood	2	54	...	...	...	..	...	250	20	260	340	16	66	...	940	Strong flow.
Anderson	2	114	...	...	...		...	186	20	440	54	24	‡66	...	838	Strong flow.
Spiceland	..	940										28	‡85	...	968	Good flow.
Connersville	1	90	...	...	...	..	...	...	...	375	240	61	‡117	...	766	Small flow.
Brookville	..	...	...	...	..	..	...	...	..	518	32	120	‡174	...	670	Small flow.
Lawrenceburg	..	139	...	...	..	..	..	...	..	185	25	451	‡158	40	840	Small flow.

* Depth to Trenton.
† Only approximate.
‡ Trenton above sea level.



GEOLOGICAL SECTION FROM VALPARAISO TO LAWRENCEBURG,

Illustrating Table Nº V.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch, Vertical scale 500 Feet to the inch.

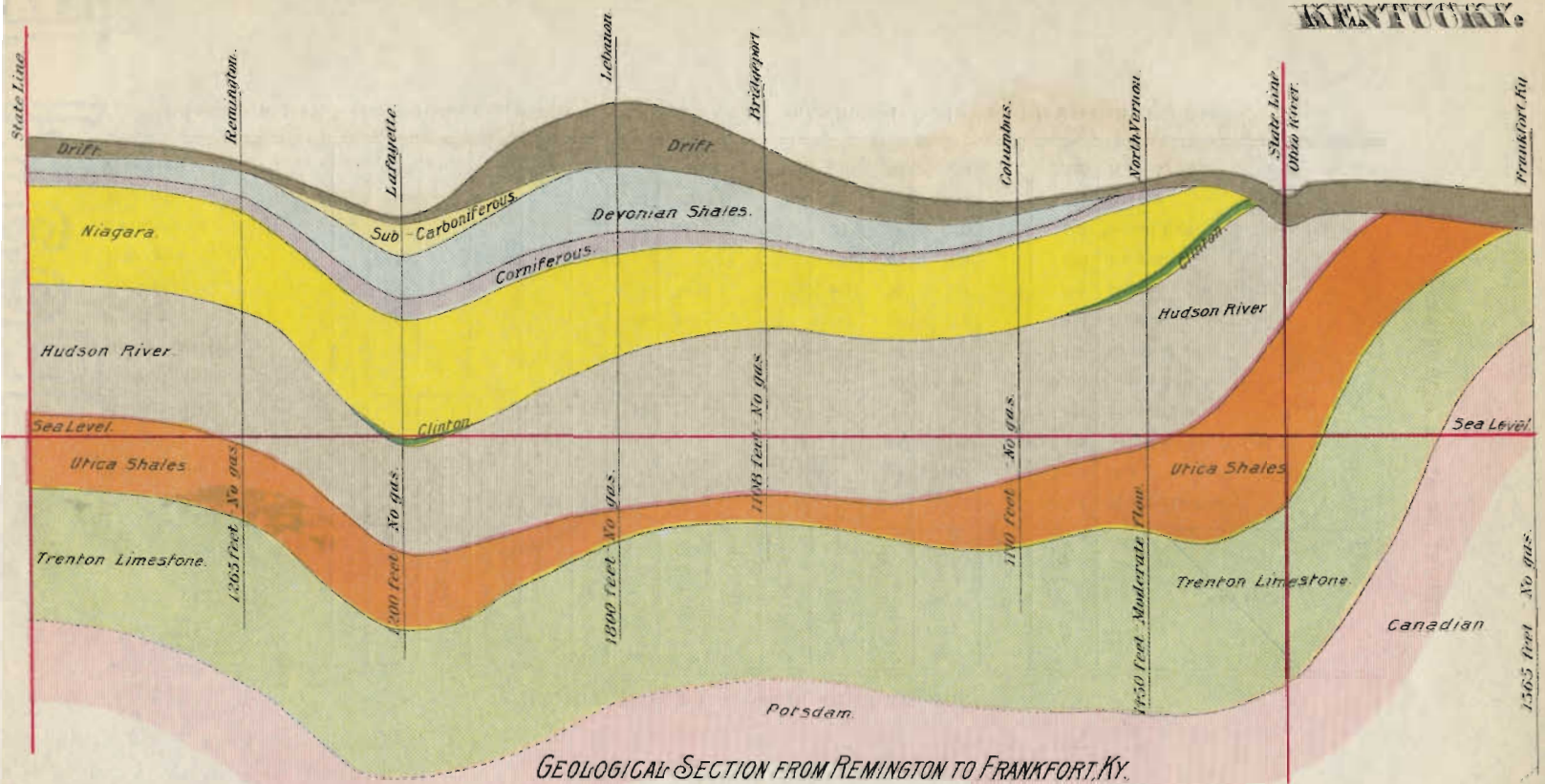
LITHOGRAPHED BY WILLIAM B. BURFORD, INDPLS.

TABLE VI.

SECTION FROM REMINGTON TO FRANKFORT, KY.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Canadian.	Total Depth.	REMARKS.
Remington	1	5	.	.	85	50	. . .	260	.	570		295	*225	. . .	1,265	No gas.
Lafayette	1	.	. . .	100	120	60	.	350		300	198	72	548	. . .	1,200	No gas.
Lebanon	1						1,227					271	302	. .	1,800	No gas.
Bridgeport	1	140	. . .	. . .	124	40	. . .	220	. . .	455	55	74	247	. .	1,108	No gas.
Columbus	1	26	. .	. . .	87	32	. .	235	. . .	440	135	155	311	. . .	1,110	No gas.
North Vernon	1	11	. . .	. .	. .	58	. . .	222	29	440	220	470	253	. .	1,450	Moderate flow.
*Frankfort, Ky	1	†125	.	. .	. . .	. .	. . .	. .	. . .	.	. . .	250	‡550	1,250	1,565	No gas.

*Only approximate.
†River alluvium.
‡Trenton above sea level.
At North Vernon, gas and small quantities of oil were found in the Niagara limestone, above the Trenton.



GEOLOGICAL SECTION FROM REMINGTON TO FRANKFORT, KY.

Illustrating Table No VI.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

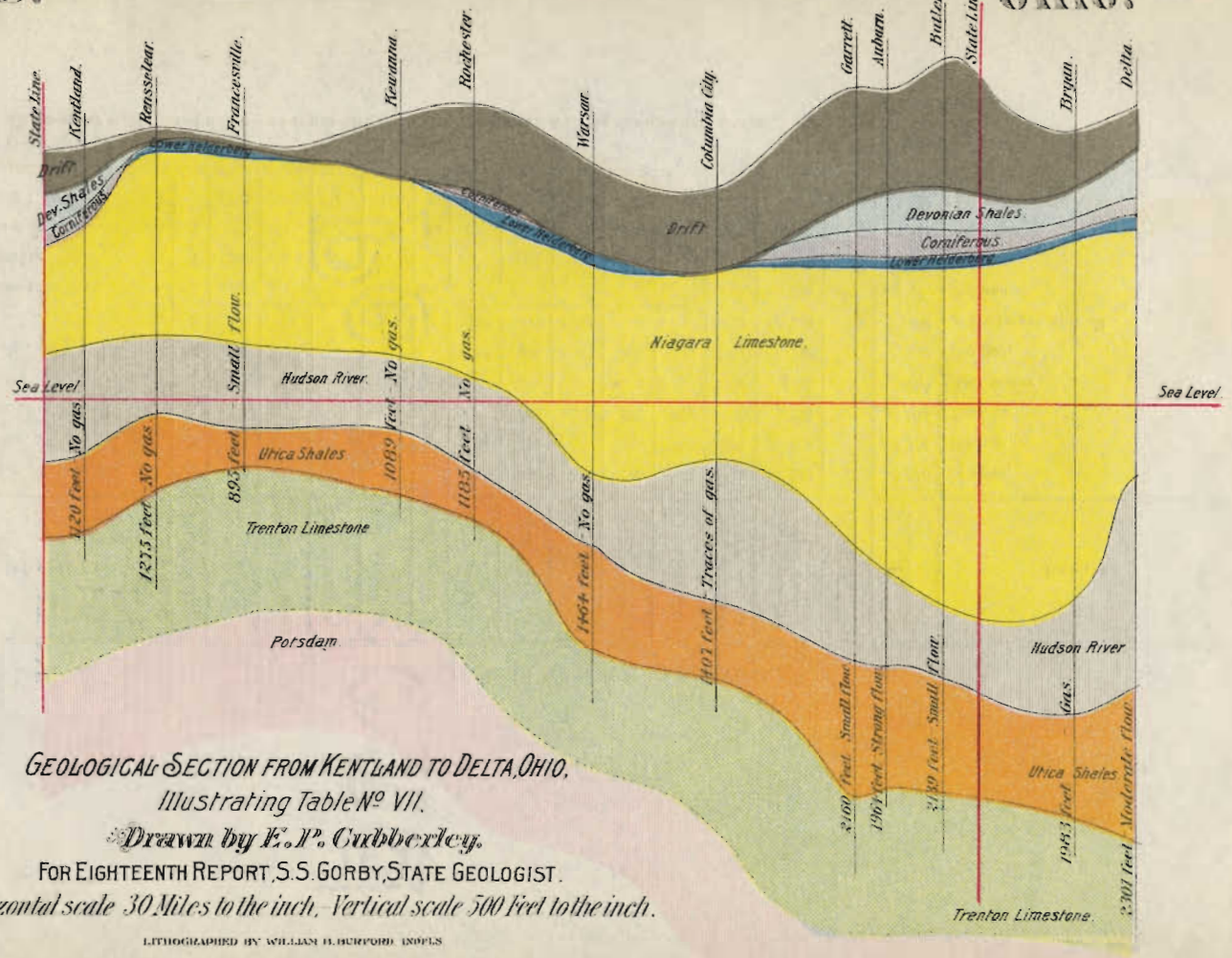
LITHOGRAPHED BY WILLIAM H. DUFFORD, INDPLS.

TABLE VII.

SECTION FROM DELTA, OHIO, TO KENTLAND.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Delta, Ohio	1	117	...	...	133	45	737			1,030		229	1,241	...	2,301	Moderate flow.
Bryan, Ohio	1	176	...	...	74		1,060			635		38	1,180	...	1,983	Gas.
Butler	1	378	...	...	102	...	1,064			500		89	1,187	...	2,139	Small flow at 27 feet.
Auburn	1	280	...	...	120	80	40	823 ?		300	268	27	1,069	...	1,964	Strong flow.
Garrett	1						1,930					180	1,098	...	2,160	Small flow.
Columbia City	1	224	...	...	...	...	...	526	...	400	218	39	545	...	1,407	Trace of gas.
Warsaw	1	248	...	...	...	...	60	592	...	200	287	77	570	...	1,464	No gas.
Rochester	1	245	...	...	...	40	40	460	...	260	101	24	351	...	1,185	No gas.
Kewanna	1	170	...	...	...	...	...	540 ?		205	175	29	274	...	1,089	No gas.
Francesville	1	8	...	...	...	...	30	512	...	235	100	10	200	...	895	*Small flow.
Rensselear	...	30	...	...	...	...	35	500	...	225	100	385	158	...	1,275	No gas.
Kentland	...	100	...	...	100	45	...	305 ?		300	210	60	379	...	1,120	No gas.

*Petroleum, at the rate of 25 barrels a day, was found at a depth of 630 feet, and a little oil also immediately upon striking Trenton.



GEOLOGICAL SECTION FROM KENTLAND TO DELTA, OHIO.

Illustrating Table No. VII.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 feet to the inch.

LITHOGRAPHED BY WILLIAM H. BURFORD INDPLS

TABLE VIII

SECTION FROM DECATUR TO KENTLAND.

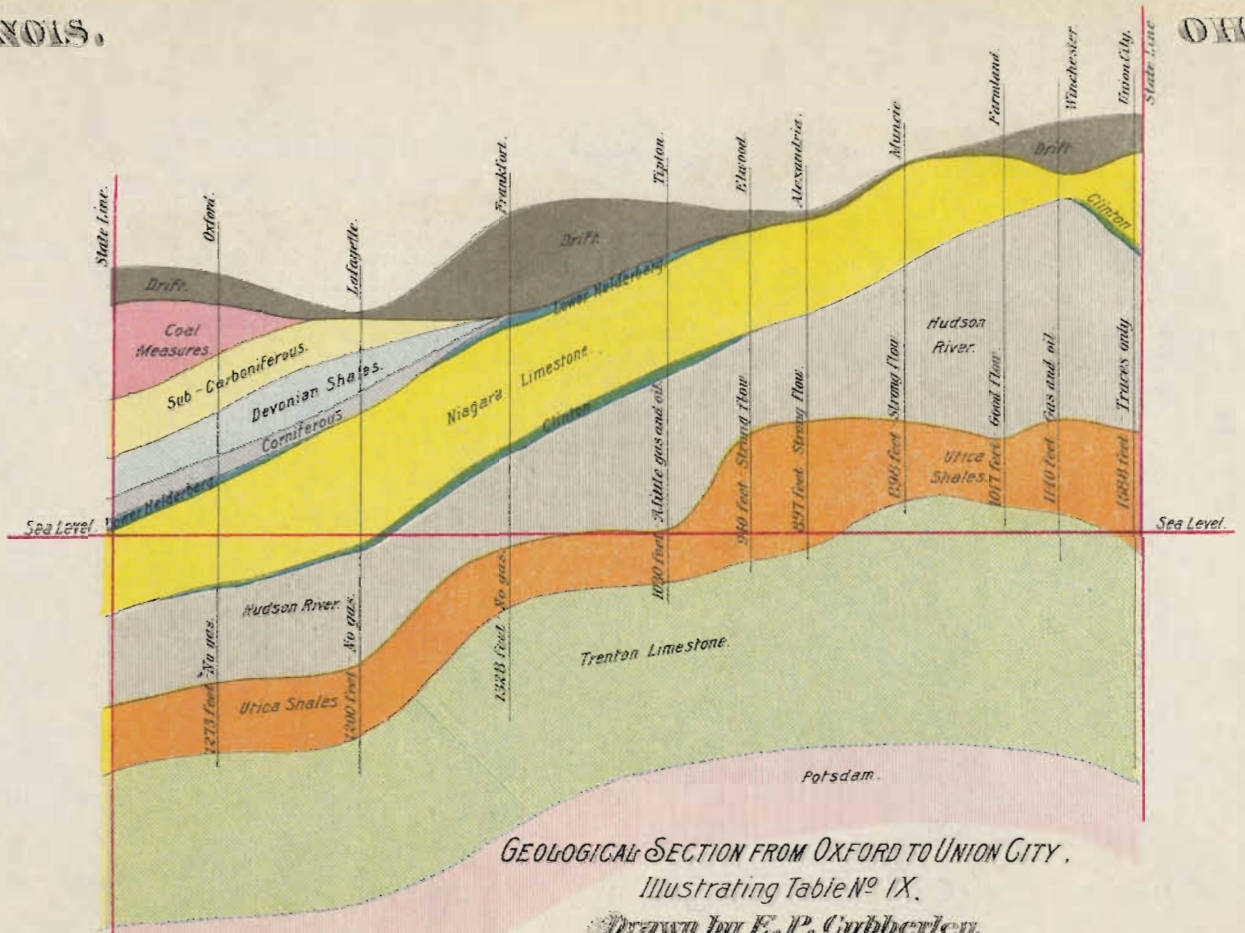
STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shale.	Coniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Decatur	1	39	...	...	...	..	40	440	...	300	211	10	223	...	1,040	No gas.
Bluffton	2	51	...	...	...	..	30	478	...	340	175	31	238	.	1,106	No gas.
Huntington	1	2	...	...	...	..	...	298	...	275	320	39	255	..	1,034	No gas.
Andrews	1	70	...	...	...	..	...	300	...	562		36	†215	...	968	Salt water.
Wabash	2	28	..	..	...	..	40	485	..	160	165	54	198	...	932	No gas.
*Peru	2	10	...	...	...	..	40	415	15 (?)	449		27	229	...	956	A little gas and oil.
Logansport	1	995										...	334	...	....	No gas.
Monticello	1	205	...	...	...	..	...	515	..	120	170	63	338	...	1,073	No gas.
Remington	1	5	...	...	85	50	...	260	...	570	...	295	†225	...	1,065	No gas.
Kentland	..	100	...	...	100	45	...	305	?	300	210	60	379	...	1,120	No gas.

† Only approximate.

* Three other wells bored north and south of Peru gave a little oil, a little gas and salt water.

ILLINOIS.

OHIO.



GEOLOGICAL SECTION FROM OXFORD TO UNION CITY.

Illustrating Table Nº IX.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 feet to the inch.

TABLE IX.

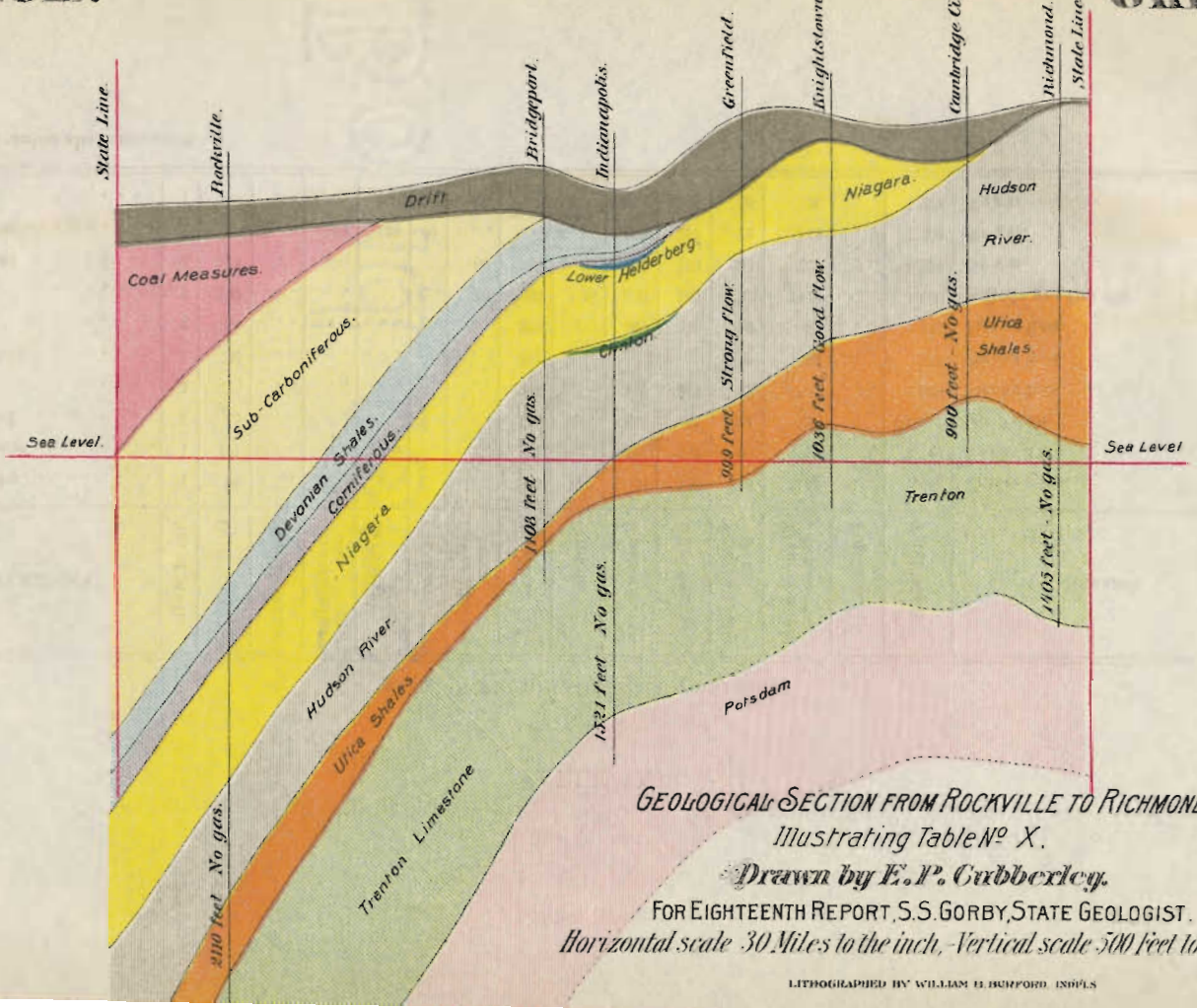
SECTION FROM UNION CITY TO OXFORD.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Union City	1	98	...	...	...	..	...	210	10?	500	300	540	40	...	1,688	Traces only.
Winchester	1	147	...	..	...	..	...	71	...	582	250	90	*43	...	1,140	Gas and oil.
Farmland	1	55	...	...	...	.	...	160	...	585	185	32	*55	..	1,017	Good flow.
Muncie	1	...	...	...	...	..	...	265	...	400	211	22	*97	...	898	Strong flow.
Alexandria	1	20	...	...	...	..	...	261	...	611		5	40	...	897	Strong flow.
Elwood	2	54	...	...	...	..	...	270	...	260	340	16	66	...	940	Strong flow.
Tipton	1	139	..	...	...	..	30	260	36	400	132	33	129	...	1,030	A little gas and oil.
Frankfort	2	278	...	..	...	..	60	300	30	250	150	260	227	...	1,328	No gas.
Lafayette	1	...	...	100	120	60	...	350		300	198	72	548	...	1,200	No gas.
Oxford	1	385	..	...	100	50	30	265?		255	188	20	570	...	1,273	No gas.

*Trenton above sea level.

ILLINOIS.

OHIO.



GEOLOGICAL SECTION FROM ROCKVILLE TO RICHMOND.

Illustrating Table Nº X.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S.S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch, Vertical scale 500 Feet to the inch.

LITHOGRAPHED BY WILLIAM H. BURFORD, INDPLS

TABLE X

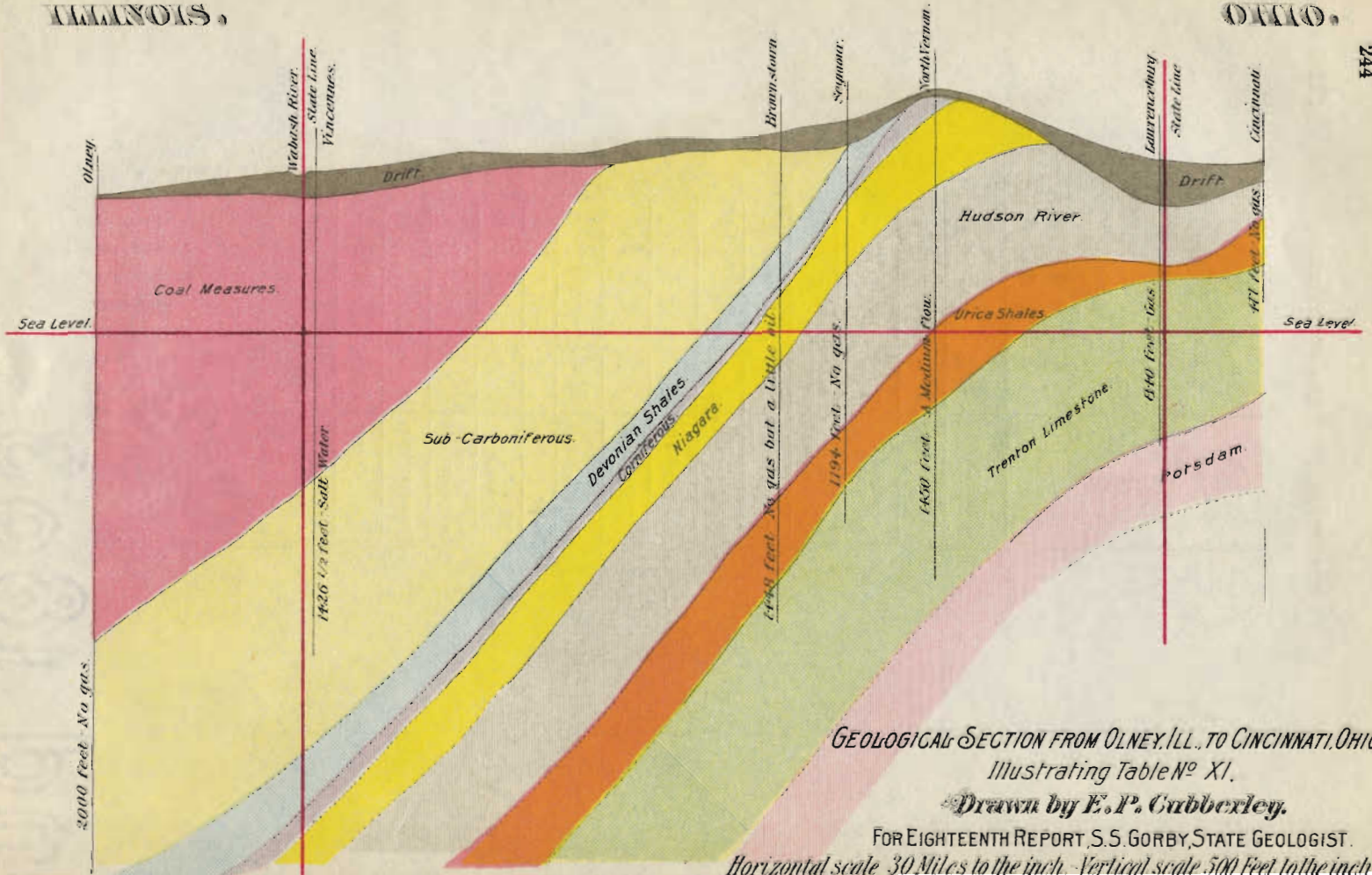
SECTION FROM RICHMOND TO ROCKVILLE.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Coniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Richmond	1	5	...	...	...	..	...	...	...	500	380	510	*79	10	1,405	No gas.
Cambridge City	1	96	..	...	...	..		2	..	400	288	133	*174	...	900	No gas.
Knightstown	1	64	..	...	...		...	260	...	300	199	213	*113	...	1,036	Good flow.
Greenfield	..	205	...	...	...	..	...	170	...	400	210	14	54	...	999	Strong flow.
Indianapolis	..	118	...	...	...	68	20	200	20	300	74	620	179	1	1,521	No gas.
Bridgeport	..	140	...	...	124	20	...	244	...	455	55	70	247	...	1,108	No gas.
Rockville	..	96	259	689	102	62	...	370	...	324	108	10	1,412	...	2,110	No gas.

* Trenton above sea level.

ILLINOIS.

OHIO.



GEOLOGICAL SECTION FROM OLNEY, ILL., TO CINCINNATI, OHIO.

Illustrating Table Nº XI.

Drawn by E. P. Cubbeley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

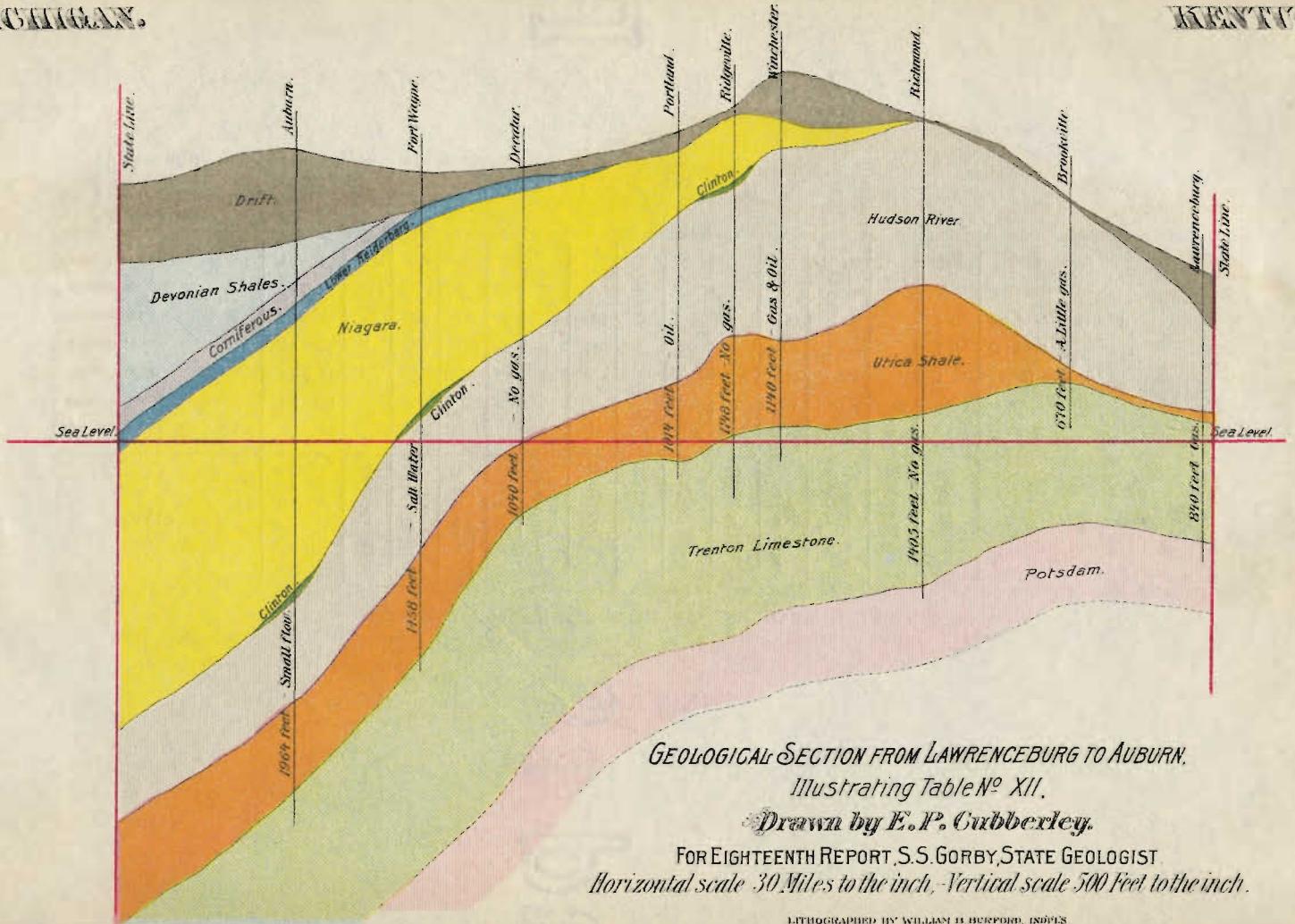
Horizontal scale 30 Miles to the inch. Vertical scale 500 feet to the inch.

TABLE XI.

SECTION FROM CINCINNATI, OHIO, TO OLNEY, ILLINOIS.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Cincinnati	-	48	...	...	...	..	...	...	.	124	135	110	‡*200	...	417	No gas.
Lawrenceburg	1	139	...	..	..	..	...	..	...	185	25	451	*158	40	840	Gas.
North Vernon	1	11	..	...	...	58	.	222	29	440	220	470	253	..	1,450	†Medium flow.
Seymour	1	75	...	..	130	25	..	190	..	500	165	94	472	...	1,194	No gas.
Brownstown	1	43	..	275	147	25	...	200	...	658		100	‡758	..	1,448	No gas. Little oil.
Vincennes	1	80	845 ?	501½ ?	.	..	..	...	...	...	...	...	⁂950	..	1,426½	Salt water.
Olney, Ill	1	12	1,319	669	.	..	...		...	...	...	..	⁂1,600	..	2,000	No gas.

* Trenton above sea level.
† Gas in Niagara Limestone.
‡ Only approximate.
⁂ Bottom of the well below sea level. Only approximate.



GEOLOGICAL SECTION FROM LAWRENCEBURG TO AUBURN.

Illustrating Table Nº XII.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

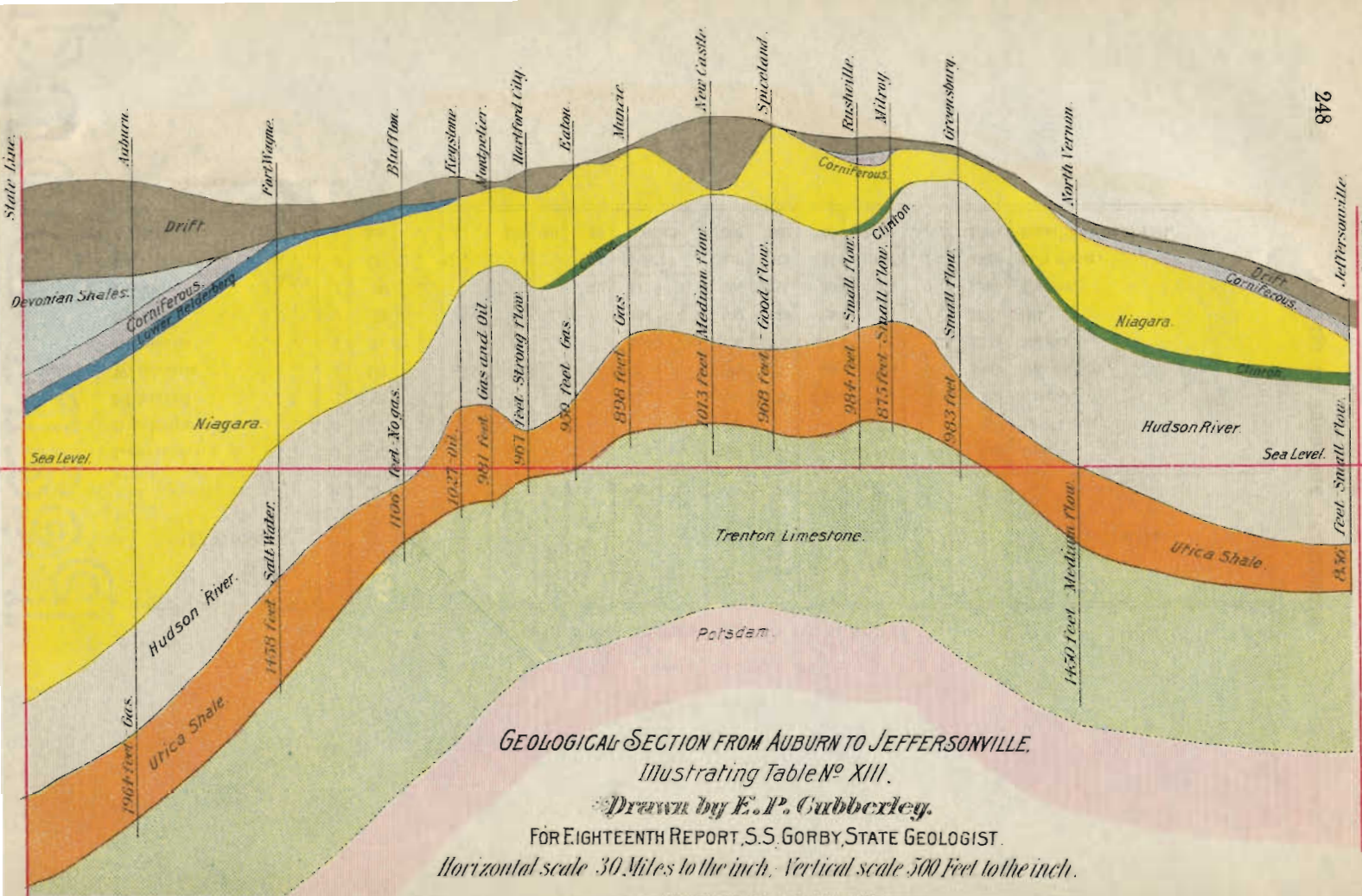
LITHOGRAPHED BY WILLIAM B. BURFORD, INDPLS.

TABLE XII.

SECTION FROM LAWRENCEBURG TO AUBURN.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Coniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	Remarks.
Lawrenceburg	1	139	...	...	..	..	...	..	...	185	25	451	*158	40	840	Gas.
Brookville	1	...	...	...	...	..	...	...	...	518	32	120	*174	..	670	Little gas.
Richmond	1	5	..	...	..	..	...	...	...	500	380	510	*79	10	1,405	No gas.
Winchester	1	147	...	...	...	..	...	71	...	582	250	90	*43	...	1,140	Gas and oil.
Ridgeville	1	30	...	..	...	..	...	260	12	436	303	167	*1	...	1,148	No gas.
Portland	2	58	...	...	...	..	...	192	...	500	240	24	63	...	1,014	Oil.
Decatur	1	39	...	...	...	..	40	440	...	300	211	10	223	...	1,040	No gas.
Fort Wayne	2	110	...	...	...	..	34	571?		410	312	21	650	...	1,458	Salt water.
Auburn	1	280	...	...	120	80	40	823?		300	268	27	1,069	...	1,964	Small flow at 27 feet.

* Trenton above sea level.



GEOLOGICAL SECTION FROM AUBURN TO JEFFERSONVILLE.

Illustrating Table No XIII.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch. Vertical scale 500 Feet to the inch.

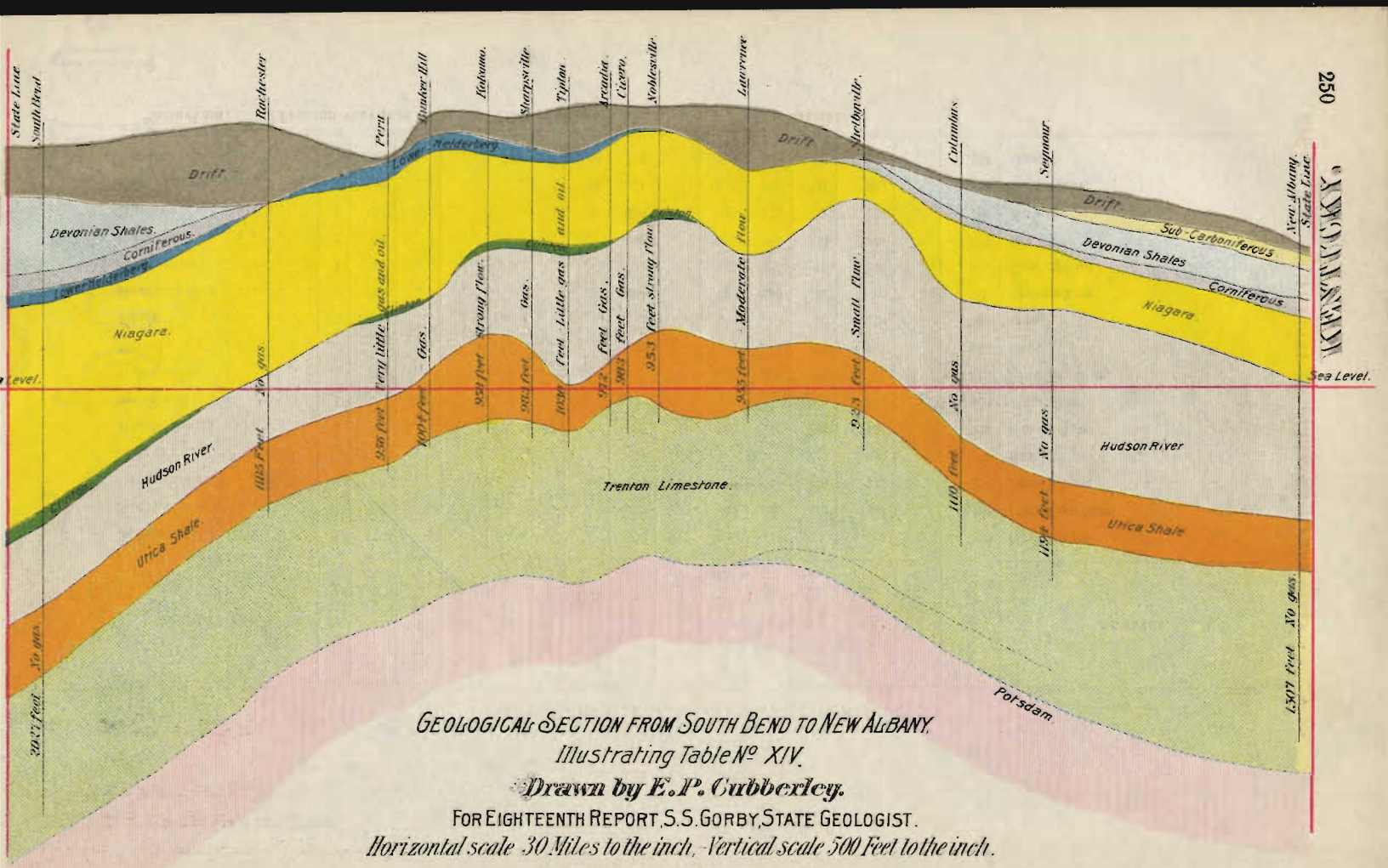
LITHOGRAPHED BY WILLIAM B. BURFORD, INDPS.

TABLE XIII.

SECTION FROM JEFFERSONVILLE TO AUBURN.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Jeffersonville	1	*45	...	...	...	40	...	105	20?	500	146	...	401	...	856	Small flow.
North Vernon	1	*11	...	...	...	28	...	252	29?	440	220	470	253	...	1,450	‡Medium flow.
Greensburg	1	7	...	...	...	...	...	90	...	713	110	63	†32	...	983	Small flow.
Milroy	...	30	...	...	...	...	...	80	...	765		...	....	...	875	Small flow.
Rushville	1	60	...	...	...	40	...	180	20	300	260	124	†124	...	984	Small flow.
Spiceland	1	...	...	...	...	...	...	...	...	...	...	28	†85	...	968	Good flow.
New Castle	2	243	...	...	...	...	...	5	...	452	235	78	†120	...	1,013	Medium flow.
Muncie	...	...	...	...	...	...	...	265	...	300	311	22	†97	...	898	Gas.
Eaton	...	...	...	...	...	...	...	...	...	...	...	30	‡10	...	950	Gas.
Hartford City	2	82	...	...	...	...	...	280	...	433	140	32	40	...	967	Strong flow.
Montpelier	1	17	...	...	...	...	...	233	...	432	280	19	110	...	981	Gas and oil.
Keystone	1	62	...	...	...	...	...	260	...	375	300	30	‡125	...	1,027	Oil.
Bluffton	2	51	...	...	...	...	30	479	...	340	175	31	238	...	1,106	No gas.
Fort Wayne	2	110	...	...	...	...	34	571	...	400	312	21	650	...	1,458	Salt water.
Auburn	1	280	...	...	120	80	40	843	...	306	268	27	1,069	...	1,964	Gas.

*Alluvium. †Trenton above sea level. ‡Gas in Niagara Limestone. ‡Approximate.



GEOLOGICAL SECTION FROM SOUTH BEND TO NEW ALBANY.

Illustrating Table Nº XIV.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch, Vertical scale 500 Feet to the inch.

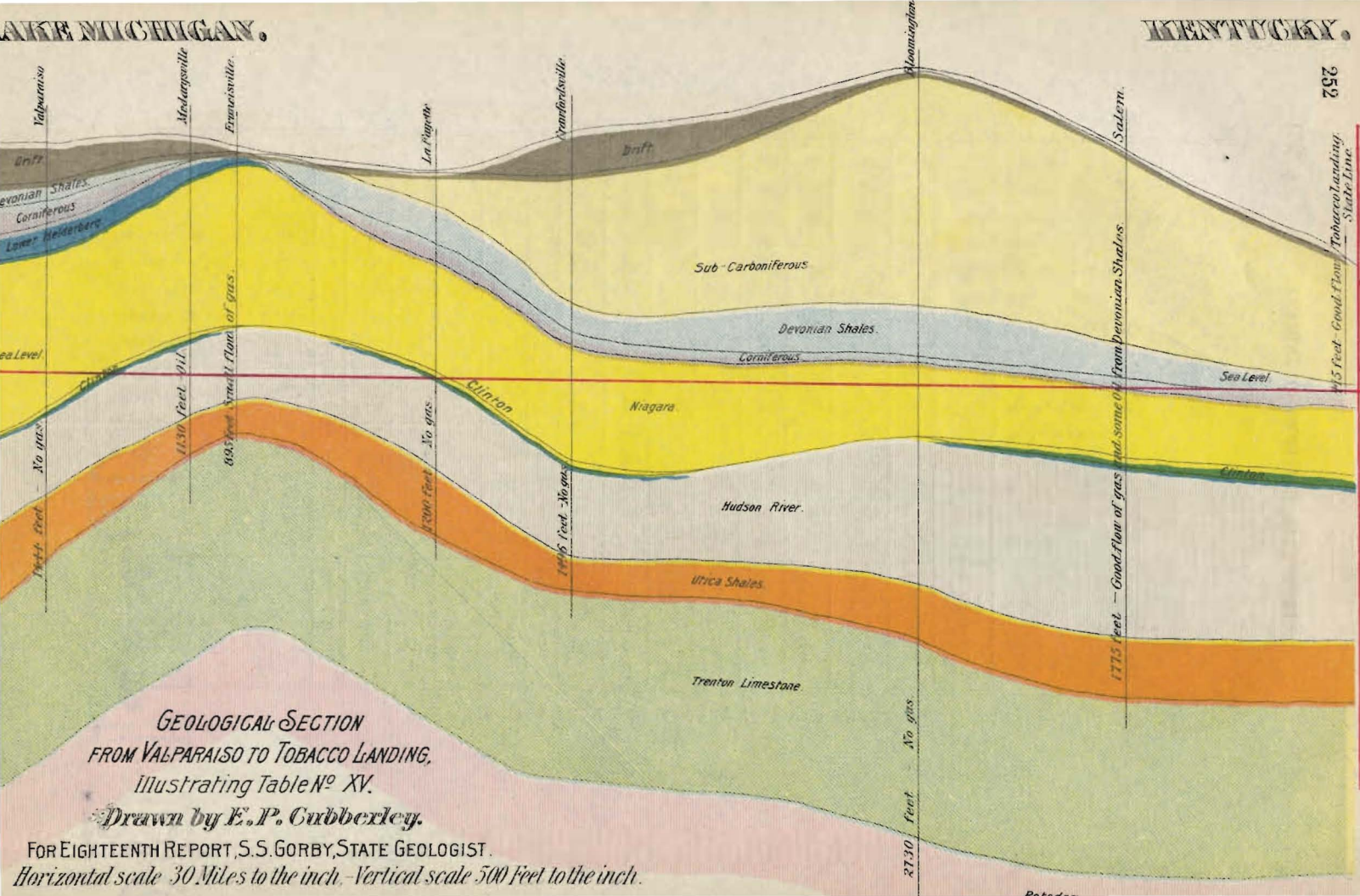
LITHOGRAPHED BY WILLIAM H. BURFORD, INDPLS.

TABLE XIV.

SECTION FROM NEW ALBANY TO SOUTH BEND.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
New Albany	1	20	...	60	104	69	...	209	...	400	145	500	*575	...	1,507	No gas.
Seymour	1	75	...	15	115	20	...	190	...	520	165	94	472	...	1,194	No gas.
Columbus	1	26	...	..	87	32	...	235	...	440	135	155	311	...	1,110	No gas.
Shelbyville	1	48	...	.	...	30	...	102	.	509	157	86	79	...	923	Small flow.
Lawrence	1	188	.	..	..	..	...	272	...	300	155	40	*60	...	955	Moderate flow.
Noblesville	35	73	.	...	...	..	..	239	30	350	126	9	76	...	853	Strong flow.
Cicero	1	161	...	...	..	..	..	300	...	490		32	....	...	983	Gas.
Arcadia	..	...	...	...	...	..	..	...	...	...	...	12	....	...	972	Gas.
Tipton	1	139	...	...	...	..	30	260	36	400	132	33	129	...	1,030	Little gas and oil.
Sharpsville	1	...	...	...	...	..	...	...	...	...	...	8	....	...	982	Gas.
Kokomo	4	61	...	..	...	..	59	270	30	265	251	22	97	...	958	Strong flow gas.
Bunker Hill	1	58	...	.	...	.	50	453	...	221	210	12	155	...	1,004	Gas.
Peru	2	10	...	...	..	..	50	405	15	219	200	27	229	...	956	Very little gas and oil.
Rochester	1	245	...	...	.	.	...	525	..	200	191	24	351	...	1,185	No gas.
South Bend	..	160	...	...	220	60	40?	640	40	220	200	427	855	...	2,027	No gas.

*Approximate.



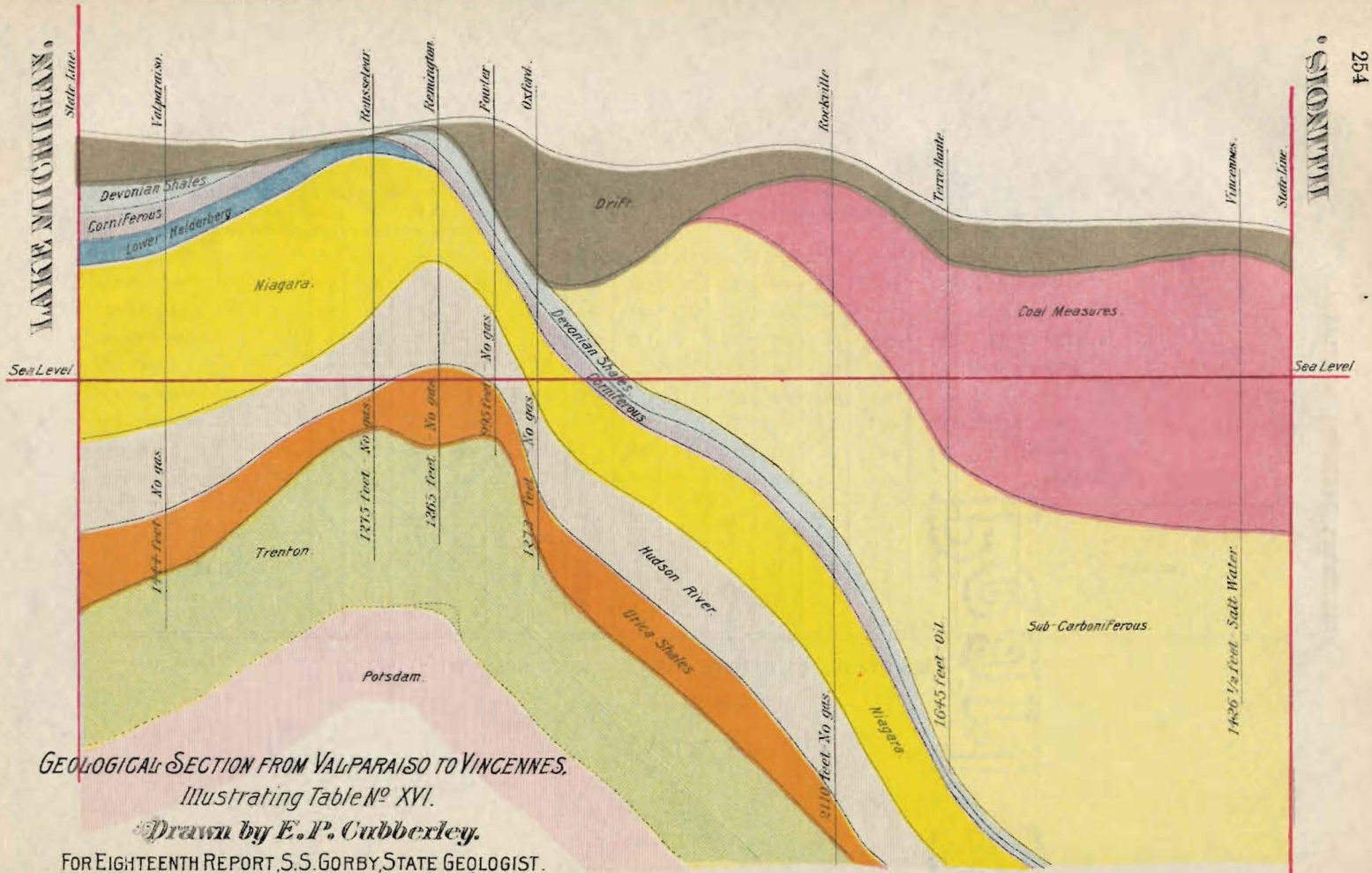
GEOLOGICAL SECTION
FROM VALPARAISO TO TOBACCO LANDING,
Illustrating Table Nº XV.
Drawn by E. P. Cubberley.
FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.
Horizontal scale 30 Miles to the inch, - Vertical scale 500 Feet to the inch.

TABLE XV.

SECTION FROM TOBACCO LANDING TO VALPARAISO.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Tobacco Landing	1	...	...	405	10	.	..	...	..	...	..	..	‡400	...	415	*Good flow.
Salem	1	7	...	620	103	40	..	215	30	535	180	45	1,000	...	1,775	†Good flow.
Bloomington	1	6	.	749	155	15	...	240	..	485	180	626	1,108	274	2,730	No gas.
Crawfordsville	1	140	...	410	80	55	...	380 ?		250	115	69	664	..	1,496	No gas.
Lafayette	1	.	..	100	120	60	...	350		300	198	72	548	...	1,200	No gas.
Francesville	1	8	.	...	..	..	30	512	.	235	100	10	200	...	895	‡Small flow.
Medarysville	2	50	..	...	30	..	60	480	10?	250	130	60	....	..	1,030	Oil.
Valparaiso	1	125	...	..	65	70	80	495	10?	260	195	144	692	..	1,444	No gas.

* Gas in good quantities in Devonian shales.
‡ Petroleum, at the rate of 25 barrels a day, was struck at a depth of 630 feet, and more on striking Trenton.
† Gas here came from the limestones underlying the Devonian shales.
‡ Approximate.



GEOLOGICAL SECTION FROM VALPARAISO TO VINCENNES.

Illustrating Table Nº XVI.

Drawn by E. P. Cubberley.

FOR EIGHTEENTH REPORT, S. S. GORBY, STATE GEOLOGIST.

Horizontal scale 30 Miles to the inch, Vertical scale 500 Feet to the inch.

TABLE XVI.

SECTION FROM VINCENNES TO VALPARAISO.

STATIONS.	No. of Well.	Drift.	Coal Measures.	Subcarboniferous.	Devonian Shales.	Corniferous.	Lower Helderberg.	Niagara.	Clinton.	Hudson River.	Utica Shales.	Trenton Limestone.	Trenton Below Sea Level.	Potsdam.	Total Depth.	REMARKS.
Vincennes	1	80	? 845	? 501½	...	..	..	...	...	...	..	...	*950	...	1,426½	Salt water.
Terre Haute	..	150	573	922	..	..	...	..	...	..	..	...	*1,150	...	1,645	Oil.
Rockville	..	96	259	689	102	62	...	370	...	324	108	10	1,412	...	2,110	No gas.
Oxford	1	385	...	.	100	50	30	265	?	255	188	20	570	...	1,273	No gas.
Fowler	1	280	..	...	92	45	..	228	...	185	155	.	181	..	995	No gas.
Remington	1	5	...	...	85	50	...	260	...	570		295	†225	...	1,265	No gas.
Rensselear	..	30	...	...	..	.	35	500	...	225	100	385	158	...	1,275	No gas.
Valparaiso	1	125	..	..	65	70	80	495	10 ?	260	195	144	602	...	1,444	No gas.

† Approximate.
* Bottom of well below sea level. In the case of Vincennes only approximate.